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PURPOSE *FOR* AND *WITHIN* CREATION: A THEOLOGICAL APPRAISAL OF ORGANISMIC TELEOLOGY

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Abstract

Although many believe that modern evolutionary biology renders teleology superfluous, this article explores the recent resurgence of attempts to locate teleology, functions, and purpose in the nature of *organisms*. This essay further explores the relevance of teleology within Catholic, Protestant, and Eastern Orthodox traditions, and the ways in which some theological doctrines have been construed against a teleological conception of both humanity and the wider cosmos. It also defends the reality of intrinsic teleology against an evolutionary-reductionist accommodation strategy, and responds to the accusation that a theological affirmation of purpose within biological organisms entails the thorny position of intelligent design.

Introduction

It is commonly assumed that the rise of modern science and evolutionary biology entailed the demise of teleology. The received narrative is that the shift to *mechanism* meant that final causation was subsumed under efficient causation. Darwinian evolution provided a new framework for explaining biological change and progression without the need for teleological categories of purposes, goals, and divine intentionality. This has led some thinkers to exclaim with striking confidence that the message of science is "absolutely clear: no teleology, no purposes, goals, or ends."[1]

Given this development, some theologians have come to argue that whereas there is purpose *for* creation, there is no purpose *in* creation. This article will argue for the opposing position, namely that there are good philosophical reasons for affirming teleology within the natural world and that theologians ought to affirm the reality of *intrinsic teleology*. Consequently, those who reject intrinsic teleology in favour of reductionist and mechanistic categories need to acknowledge the theological costs of such a move.

I begin by exploring the ways in which teleology has been connected with crucial theological doctrines and beliefs from the perspectives of Catholic, Protestant, as well as Eastern Orthodox

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[1] Alex Rosenberg, *The Atheist's Guide to Reality: Enjoying Life without Illusions* (New York: W.W Norton & Company, Inc., 2011), 43.

traditions. Within these traditions, it is generally believed that teleology can shed light on the Christian affirmations regarding divine providence, creation, and human nature, and that some theological beliefs stand and fall with the possibility of viewing nature teleologically.

In the second part of this article I will explore recent accounts of natural teleology based on the notion of self-sustaining activity—most clearly manifested by the life and development of *organisms*. I will argue that these accounts pave the way for an intrinsic teleology fruitful for upholding the strikingly teleological doctrines within Catholic, Eastern Orthodox, and Protestant thought.

In the third and final part of this article, I will analyse the possibility of upholding a balance between extrinsic and intrinsic teleology. If one places teleology in a theological setting and takes it to be a result of God's action, then purposive phenomena are in some sense externally grounded—in the divine plan for creation. How, then, from a theological standpoint, do we make sense of *intrinsic* teleology? Does a theistic accommodation make intrinsic teleology untenable, and would a theological affirmation of teleology ultimately lead to Intelligent Design? I will discuss these issues in the last part of this essay.

Theological Voices on the Relevance of Teleology

Different theological traditions have, in diverse ways, emphasised the need for teleology to make sense of and articulate central Christian doctrines and ideas. A natural place to start, in order to explicate this claim, is natural law theory. Adherents to natural law theory are typically, but not always, Roman Catholic. Although many thinkers of the early Church reflected deeply on the nature of virtue and moral law, Thomas Aquinas provided much of the fundamentals of natural law theory by assimilating to the Christian tradition both Aristotelian and Neoplatonic metaphysical frameworks.[2]

In a broad sense, natural law approaches to theological ethics seek to base moral law within the natural order and in continuation with human nature. Nature is morally prior to both positive law and social convention.[3] First, Scholastic thought presupposes that there is such a thing as human nature and, second, that this nature is "accessible and intelligible" and "worth preserving and expressing."[4] It should be noted that the term "nature" usually has nothing to do with nature as we usually understand it. Rather, "natural law is said to be natural in the sense of being preconventional, and law in the sense that it is comprised of intrinsic, normative principles by which action should be regulated."[5] Typically, the natural law proponent seeks to articulate an account of moral theory whereby the appropriateness of an action is judged in relation to what it means to be a human being: what is morally good is, then, based on what is *good for human beings*, and many natural law proponents seek to connect moral goodness with that which can maximize flourishing for the human person. Indeed, "human happiness must be recognizable as a kind of flourishing appropriate to a creature that exists and lives and enjoys a distinctively animal life."[6] As human nature includes both body and soul, we need to understand the human good in terms of material, spiritual, moral, and intellectual categories: "Human nature is oriented to lower

[2] Stephen Pope, "Reason and Natural Law," in *Oxford Handbook of Theological Ethics*, eds. Gilbert Meilaender and William Werpehowski (Oxford: Oxford University Press, 2007), 150.

[3] Ibid., 149.

[4] Jean Porter, "The Natural Law and the Normative Significance of Nature," *Studies in Christian Ethics* 26, no. 2 (May 2013): 166-173; 167.

[5] Jean Porter, *Natural and Divine Law: Reclaiming the Tradition for Christian Ethics* (Grand Rapids, MI: William B. Eerdmans Publishing Company, 1999), 51.

[6] Jean Porter, *Nature as Reason: A Thomistic Theory of Natural Law* (Grand Rapids, MI: William B. Eerdmans Publishing Company, 2005), 82.

goods (of the body), to relatively higher goods (of the soul), and to an ultimate good (God)."[7] Natural law is, therefore, how human beings come to manifest the divine image.

As both Stephen Pope and Jean Porter explain, this natural law conception of human nature is unashamedly teleological. For Pope, "Natural law ethics evaporates if nature is purposeless."[8] In fact, Pope contends that the "continued development of natural law ethics depends on re-establishing a sense of the purposefulness of the natural world in general and of human nature in particular."[9] The plausibility of natural law theory thus hinges on the possibility of maintaining a teleological view of the world.

We can find a similar sense of urgency expressed by the nineteenth-century Protestant philosopher James McCosh, who noted that a potential Darwinian rejection of purpose within nature would have devastating effects for our theological endeavours to articulate God's active presence in the world. McCosh argued forcefully against Charles Hodge's view that evolutionary theory is equivalent to atheistic materialism. Surely, God could have created everything within the world without any intermediary causes, but McCosh suggested that "[s]uch is God's method of distributing causes throughout the cosmos. It is our business not to rebel against the plan, but to fall in with it and profit by it."[10] For Hodge, the Darwinian emphasis on natural selection excludes teleology, and so also the notion that the world owes its existence to divine design. Hodge, then, "pronounced Darwinism to be practically atheism, on the ground that it excluded teleological explanation from nature."[11] McCosh countered Hodge's sceptical view of evolution by showing that Darwin's theory, far from excluding ends and purposes, gives evidence of divine intentionality and an immanent teleology: "Evolution does not lessen the force of the teleological argument" and the "theory of Evolution does not undermine or interfere in any way with the ordinary doctrine of Final Cause."[12] The force of the teleological argument is not "lessened by the circumstance that the skilful structures have been inherited."[13] Science therefore provides sophisticated reasons for thinking of nature as divinely created, compared to Hodge's conflict-thesis. As James C. Livingston explains with regard to McCosh's theological accommodation of the mechanisms of evolution: "McCosh believed that this 'wider' teleology of an interconnected, unitary plan was more compelling for a natural theology . . ."[14]

This notion of a wider teleology was also emphasised by Aubrey Moore (1848-1890), a Canon at Christ Church, Oxford, and one of the first "Christian Darwinians." For Moore, Darwinian evolution did not pose a threat to Christian theology and the belief in a sustaining and active God. On the contrary, it allowed the Christian to reconceive divine providence in an immanent manner, whereby God is seen as working through and in conjunction with the mechanisms of evolution. Moore banished the view of God as "an occasional visitor" by depicting divine providence as mediated through natural processes.[15] Moore, who welcomed the evolutionary narrative, saw a wider teleology to confirm the Christian belief "that God acted constantly throughout nature. Natural selection, like all natural laws, was evidence of the action of the indwelling Logos . . ."[16]

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[7] Pope, "Reason and Natural Law," 152.

[8] Ibid., 159.

[9] Ibid., 160.

[10] James McCosh, *The Religious Aspect of Evolution* (New York: Charles Scribner's Sons, 1890), 3.

[11] David Fergusson, *The Providence of God: A Polyphonic Approach* (Cambridge: Cambridge University Press, 2018), 168.

[12] McCosh, *The Religious Aspect of Evolution*, 69.

[13] Ibid.

[14] James C. Livingston, "Natural Science and Theology," in *The Blackwell Companion to Nineteenth-Century Theology*, ed. David Fergusson (Oxford: Wiley-Blackwell, 2010), 156.

[15] Fergusson, *The Providence of God*, 198.

[16] Richard England, "Natural Selection, Teleology, and the Logos: From Darwin to the Oxford Neo-Darwinists, 1859-1909," *Osiris* 16 (2001): 270-287; 271.

Darwin's discovery enabled a richer and more immanent teleology, which provided new resources for framing God's action in an evolutionary world.

Alister McGrath has in recent publications argued for the compatibility between Darwinism and such a wider teleology. This form of teleology, which Thomas Huxley affirmed, is "rooted in the deeper structure of the universe."[17] McGrath contends that it is possible to talk about directionality with regard to evolutionary development and that the "process of evolution at the physical, chemical, and biological levels shows a marked and essentially irreversible trend toward complexity."[18] Does such directionality, and reality of wider teleology, allow us to talk about design? McGrath makes the case that the teleological dimension of evolution can be incorporated into a theological approach "which locates evidence of design in the values of the fundamental constants of nature, the laws of nature, and the creative role of 'chance' in bringing about novelty and development—all of which are subsumed under a generalized *doctrine of divine providence*."[19] A retrieved sense of teleology helps to shed light on God's providential action within creation, and the doctrine of divine providence offers, in return, an explanation for why it is that evolution exhibits a form of immanent directionality. We see here how teleology is made theologically relevant.

In Eastern Orthodox theology, the teleological character of humanity and creation is brought together within the doctrine of theosis.[20] As Jonathan Jacobs explains, theosis—the doctrine of deification—captures the Orthodox conception of the goal of human existence and the purpose of the whole of creation.[21] This doctrine of deification, as Clement of Alexandria construed it, is about maximum possible assimilation to God: "Being baptized, we are illuminated; illuminated, we become sons; being made sons, we are made perfect; being made perfect, we are made immortal." Being deified, and to participate ontologically in the being of God, is the anthropological telos of human creatures and creation as a whole. Theosis mediates, then, a robust teleology. According to Gösta Hallonsten, the very structure of theosis is "determined by a teleology that implies that creation and human beings from the very beginning are endowed with an affinity and likeness that potentially draws them to God."[22] Hence, here as well, we can see how teleology forms a central component of a theological doctrine. Yet, as I discussed in the beginning of the article, it is commonly assumed that modern science makes teleology obsolete: many scholars have accepted the judgement that mechanism has replaced purpose. The next section will describe the resurgence of teleology, with a particular emphasis on organismic teleology. In this way, I will show that teleology is not dead, neither is it scientifically obsolete.

Teleology Retrieved: From Mechanism to Organism

Teleology is at the centre of several theological doctrines. Humanity and creation, on these theological visions, are articulated in teleological terms. God acts purposefully within the physical

[17] Alister E. McGrath, *Darwinism and the Divine: Evolutionary Thought and Natural Theology* (Oxford: Wiley-Blackwell, 2011), 186.

[18] McGrath, *Darwinism and the Divine*, 188.

[19] Ibid., 20. My emphasis.

[20] I develop this claim further in a forthcoming article, entitled "The Doctrine of Theosis and the Reality of Purpose: Exploring the Convergence between Deification and Organismic Teleology," *Toronto Journal of Theology*.

[21] Jonathan D. Jacobs, "An Eastern Orthodox conception of theosis and human nature," *Faith and Philosophy* 26, no. 5 (2009): 615-627; 615.

[22] Gösta Hallonsten, "*Theosis* in Recent Research: A Renewal of Interest and a Need for Clarity," in *Partakers of the Divine Nature: The History and Development of Deification in the Christian Traditions*, eds. Michael J. Christensen and Jeffrey A. Wittung (Grand Rapids, MI: Rosemont Publishing Printing Corporation, 2007), 285.

realm, and the final destinies of creation and humanity are understood in terms of an eschatological future. For Catholic natural law theologians, we need to understand human nature in purposeful terms. A similar emphasis on the teleological character of human nature is placed within Eastern orthodoxy, according to which the final goal of human creatures is to reach union with God. From the Protestant perspectives of McCosh, Moore, and more recently McGrath, teleology plays a crucial role for understanding God's providential activity in the natural domain.

However, in contrast to these teleological pictures, it is commonly asserted that the structure of Darwinian evolution excludes teleology and final purposes within nature. Darwin had, as Huxley famously said, delivered the "death-blow" to teleology.[23] Before the arrival of Darwin's theory we needed the categories of purpose to explain the mechanisms of nature, but now those mechanisms are employed to explain the *appearance* of purpose. Indeed, the success of Darwin was that he provided an efficient cause for evolutionary change and development, namely natural selection. One further promise of Darwinian evolution is that it seemingly removed the need of metaphysics from the arena of biology. That is, the proponents of such Darwinism "suggest that the use of the mechanistic framework is necessary in that it curtails vitalistic and teleological views of life from entering into objective science, in so doing offering a 'non-metaphysical' account of nature."[24] Many factors are important for explaining this dramatic change, most notably the discovery of the structure of DNA, the increased understanding of protein synthesis, the sequencing of genomes, and a strengthened epistemic credibility of methodological mechanism.[25] These powerful discoveries brought biology closer to modern mechanistic thinking and further away from the vitalistic philosophies of the eighteenth and nineteenth centuries. As Ernst Mayr explains, "As a result, by the time of the evolutionary synthesis of the 1940s, no competent biologist was left who still believed in any final causation of evolution or of the world as a whole."[26] Thus, the main task for today's biologists is to translate teleological categories to efficient causation and mechanistic vocabularies.

However, as Michael Ruse points out, such "biological house-cleaning has proven uncommonly difficult."[27] A main problem with this house-cleaning effort is the philosophically-mistaken assumption that one can reduce higher-order biological systems to their constituent parts. John Dupré has argued that this sort of reductionism seems problematic for the reason that the properties of the constituents need to be understood in relation to the larger system.[28] The *reductionist principle* (RP) suggests that all there is to know about a biological entity/system is fully explicable in terms of the chemical makeup of the entity/system in question. If we have a full description of the lower-level base, then it is possible *in principle* to deduce or derive the higher-level system. That is, "a fully detailed *simulation* of the interactions among the

[23] Bernard Lightman, "The Theology of Victorian Scientific Naturalists," in *Science Without God? Rethinking the History of Scientific Naturalism*, eds. Peter Harrison and Jon H. Roberts (Oxford: Oxford University Press, 2019), 242.

[24] Adam C. Scarfe, "Introduction: On a 'Life-Blind Spot' in Neo-Darwinism's Mechanistic Metaphysical Lens," in *Beyond Mechanism: Putting Life Back Into Biology*, eds. Brian G. Henning and Adam C. Scarfe (Lanham, MD: Lexington Books, 2013), 29.

[25] This shift in thinking is explained in Denis Walsh, *Organisms, Agency, and Evolution* (Cambridge: Cambridge University Press, 2015).

[26] Ernst Mayr, "The Idea of Teleology," *Journal of the History of Ideas* 53, no.1 (1992): 117-135; 119. For a full presentation of Mayr's position, see his "The Multiple Meanings of Teleological," in ed. Ernst Mayr, *Towards a New Philosophy of Biology* (Cambridge, MA: Harvard University Press, 1988), 38-66.

[27] Michael Ruse, "Teleology in Biology: Is it a Cause for Concern?," *Trends in Ecology and Evolution* 4, no. 2 (February 1989): 51-54; 51.

[28] John Dupré, "It Is Not Possible to Reduce Biological Explanations to Explanations in Chemistry and/or Physics," in *Contemporary Debates in Philosophy of Biology*, eds. Francisco J. Ayala and Robert Arp (Oxford: Wiley-Blackwell, 2010).

constituents would generate the behavior of the whole."[29] However, Dupré suggests that biological systems exhibit a multitude of relational properties that seem difficult to square with any higher-to-lower systemic reduction: for example, an enzyme (most of them are proteins, but some are RNA molecules) have multiple functions. As Dupré goes on to argue, "the intrinsic properties of a large and complex molecule such as a protein will very likely allow it to catalyze many different reactions," and many proteins do have multiple functions.[30] Indeed, the "number of *possible* functions of a protein molecule seems, in principle, quite indefinite."[31] In this way, the complete knowledge of the physical and chemical properties of a given protein will, in fact, not explain the function of the protein. This is because the capacities of a thing "depend on the relationship between the thing and the environment in which it exists."[32] Given the importance of environmental factors for understanding the function of biological systems, some argue that such systems are multiply realizable, meaning that their functions are partly determined by environmental factors. This has been emphasized within the emerging research-paradigm of evolutionary development, or Evo-devo, which focuses on phenotypic plasticity and epigenetics.[33]

Many thinkers have singled out the very nature of the organism as the main source of resistance to mechanistic-causal explanations within biology.[34] The reductionist framework of Descartes has, as William Bechtel remarks, proven itself remarkably valuable and has generated distinctive contributions within the life sciences. It is therefore unsurprising that biologists typically appeal to mechanisms, in contrast to theories or laws, when offering scientific explanations.[35] The basic mechanistic account, within the biological domain, assumes that a mechanism is "generating a phenomenon (e.g., protein synthesis) through a start-to-finish sequence of qualitatively characterized operations performed by component parts."[36] Scientists have outlined in great detail the "sequential operations of the RNA polymerase initiating the transcription of DNA into mRNA, the transport of mRNA (as well as tRNA and rRNA) into the cytoplasm, the operation of tRNA in pairing amino acids with codons on the mRNA, and finally the folding of the protein."[37] The job of the scientist is to describe the sequence of operations and the conditions that led to the production of the relevant biological phenomenon. The mechanistic explanatory model adopts a step-by-step view of the biological world in general and organisms in particular. Yet, as Bechtel goes on to argue, organisms are characterized by *autonomy*—the organism maintains its own existence by virtue of self-constructing processes and through interaction with its environment. However, simple "sequential organization allows only aggregation of component operations, and so it is insufficient to explain autonomy."[38] Because the organism engages in this self-perfecting activity,[39] its overall functionality cannot be explicated merely in terms of

[29] Ibid., 35.

[30] Ibid., 36.

[31] Ibid.

[32] Ibid., 37.

[33] Brian K. Hall, "Epigenesis, Epigenetics, and the Epigenotype: Towards an Inclusive Concept of Development and Evolution," in Henning and Scarfe, *Beyond Mechanism*, 345-69; Adam C. Scarfe, "Epigenetics, Soft Inheritance, Mechanistic Metaphysics, and Bioethics," in Henning and Scarfe, *Beyond Mechanism*.

[34] Walsch, *Organisms*; William Bechtel, "Mechanism and Biological Explanation," *Philosophy of Science* 78, no. 4 (October 2011); 553-57; William J. FitzPatrick, *Teleology and the Norms of Nature* (New York: Garland, 2000); Philip Clayton, "Machines and Organisms," in Henning and Scarfe, *Beyond Mechanism*.

[35] William C. Wimsatt, "Reductive Explanation: A Functional Account," in *Proceedings of the 1974 Meeting of the Philosophy of Science Association*, eds. R. S. Cohen and A. Michalos (Dordrecht: D. Reidel Publishing Company, 1976).

[36] Bechtel, "Mechanism and Biological Explanation," 543.

[37] Ibid., 537.

[38] Ibid., 544.

[39] On the idea of teleology as self-perfecting activity, see David S. Oderberg, *Real Essentialism* (New York: Routledge, 2007).

independent parts given that the function of regeneration spans across the whole organism and all interrelated process cycles.[40] Mere sequential organization cannot capture this phenomenon. According to Dupré, in order to understand the components of an organism and its overall functionality, we need to consider the processes of the whole. In philosophy of biology, this issue has also been expressed as the *many-many problem*: "Typically, there are many genes in the biochemical sense involved in the production of any one trait, and any one gene in the biochemical sense involved in the production of many different traits. Context determines how a gene will operate."[41] This conclusion, however, goes against both strong and weak reductionism.[42]

Given the failure of a mechanistic ontology as it pertains to the nature of organismic activity, some have argued for the plausibility of attributing teleological categories to biological organisms.[43] It is possible to locate teleology in the whole-part relation in biological organisms, and to argue that biological organization as such is intrinsically teleological. Matteo Mossio and Leonardo Bich have argued that biological organization is intrinsically teleological in the way that it is oriented toward an end.[44] In a Kantian manner, they seek to bring out the teleological character of organization through the concept of self-determination, whereby *B* "determines itself in the sense that the effects of its activity contribute to establish and maintain its own conditions of existence: in slogan form, biological systems are what they do."[45] That is, *B* produces effects which maintain the organization of *B*. This form of teleology is real and *intrinsic* (compared to human artefacts which possess *extrinsic* teleology. I will return to this distinction later). Stuart Kauffman has framed the situation in similar terms, by positing the idea that an organism "acts on its own behalf."[46] We find a similar theme expressed within Humberto Mataranas and Francisco Varela's very influential theory of *autopoietic systems*.[47] In contrast to the adaptionist programme within biology, which reduces teleology to teleonomy, the autopoietic approach to biological development locates teleology in the self-organizational and self-preserving activity of physical entities. These activities are *natural purposes*.[48] In this way, autopoiesis is inevitably circular in the sense that "parts of an organism are there through the existence of the whole and

[40] Bechtel, "Mechanism and Biological Explanation," 544.

[41] Edward Feser, *Aristotle's Revenge: The Metaphysical Foundation of Physical and Biological Science* (Neunkirchen-Seelscheid: Editiones Scholasticae, 2019), 384.

[42] Richard Brandon defines strong reductionism as the view that "posits a single basic level in terms of which all natural phenomena can be explained." Weak reductionism, somewhat more plausible than its stronger counterpart, does not posit a single basic explanatory level, but it claims that for every phenomenon "there is a lower level in terms of which the focal level can be explained." See Richard Brandon, "Reductionism Versus Holism Versus Mechanism," in *Concepts and Methods in Evolutionary Theory*, ed. Richard Branson (Cambridge: Cambridge University Press, 1996), 189.

[43] Some scholars maintain that teleology exists beyond the biological realm, in even the simplest features of the world. Thomas Nagel has controversially argued that teleology goes all the way down. See Thomas Nagel, *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature is Almost Certainly False* (Oxford: Oxford University Press, 2012). On his view, there are "natural teleological laws governing the development of organization over time, in addition to laws of the familiar kind [efficient causation] governing the behavior of the elements" (Nagel, *Mind and Cosmos*, 67). For Nagel, this "postmaterialist view" might be able to offer an adequate account of how "the physical and the mental characteristics of organisms developed together" (Nagel, *Mind and Cosmos*, 46-47).

[44] Matteo Mossio and Leonardo Bich, "What Makes Biological Organisation Teleological?," *Synthese* 194 (2017): 1089-1114.

[45] Ibid., 1090.

[46] Stuart Kauffman, *Investigations* (Oxford: Oxford University Press, 2000); Kauffman, *Reinventing the Sacred: A New View of Science, Reason, and Religion* (New York: Basic Books, 2008).

[47] Humberto Maturana and Fancisco J. Varela, *Autopoiesis and Cognition: The Realization of the Living* (Boston: Reidel, 1980).

[48] Andreas Weber and Francisco J. Varela, "Life after Kant: Natural Purposes and the Autopoietic Foundations of Biological Individuality," *Phenomenology and the Cognitive Sciences* 1, no. 2 (June 2002): 97-125; 106.

the whole is responsible for the parts."[49] This relation between cause and effect is, moreover, strictly intrinsic to the organism.[50]

Autopoietic biology "provides a link with empirical biology and thus a link to a re-understanding of teleology as intrinsic or endogenous."[51] Organisms exhibit robustness and plasticity. Robust and plastic organisms produce particular types of responses in their respective environments because these responses are survival-conducive. Hence, these activities and responses are "manifestations of organismal purposiveness."[52] This sort of phenotypic plasticity, according to Denis Walsh, contributes positively to adaptive evolution and the production of biological novelties. As he concludes, "Evolution is adaptive, because organisms are adaptive, goal-directed systems."[53] If one follows these accounts of teleology, it seems as if biology is not necessarily post-Aristotelian. Aristotle's view of life as "a self-moving thing" bears a strong resemblance to autopoiesis and the above emphasis on self-determination and organizational autonomy. What we get here is very similar to the immanent causation of Aristotelian teleology, as discussed by Edward Feser. He writes, "A causal process is immanent when it originates within the agent and terminates within it in a way that tends toward the agent's own self-perfection or completion."[54] This activity is self-perfecting, autopoietic, and intrinsic to the organism.

The nature and behaviors of biological organisms pose a substantial challenge to the mechanistic paradigm, which seeks to reduce the organism—ontologically and causally—to its component parts and the strata of chemistry and physics. Moreover, *if* a case can be made that teleological behavior is beyond reductionism, then it could be argued more positively that organisms are not merely passive entities—in the sense that they are the result of physical configurations—but they also might play an active role in evolutionary development.

This non-reductionist picture of biological organization suggests, then, that nature is not devoid of *telos*. Nature is not a purposeless realm, reducible to sheer mechanical interactions and processes. This engagement with the new voices of teleology within the biological community shows a different conception of nature, more congruent with the teleological depictions of human nature and creation that we find within Catholic, Protestant, and Eastern Orthodox traditions. However, if it is the case that nature displays a form of intrinsic purposefulness, how do we square this with the broadly theological claim that teleology is made possible by the creative and providential activity of God?

Purpose For and Within Creation: Balancing Extrinsic and Intrinsic Teleology

This article argues against the common opinion that it is possible, and desirable, to reduce teleology to non-teleological phenomena. I have explored the recent focus on organismic teleology and the abandonment of mechanistic categories. I also considered how crucial theological concepts hinge on the reality of teleology—as in the case of Catholic Natural Law tradition and in the ways that deification/theosis is articulated by scholars of the Eastern Orthodox tradition. For many within a broadly Protestant tradition, a wider teleology aids in clarifying God's

[49] Ibid.

[50] How to construe the relationship between intrinsic and extrinsic teleology is an ongoing debate in biology. In Evan Thompson's work, we find both an intrinsic teleology of self-making, but also an extrinsic orientation toward an organism's environment—i.e., self-making—which reveals its normative structure. See Thompson, *Mind in Life: Biology, Phenomenology, and the Sciences of Mind* (Cambridge, MA: Harvard University Press, 2007), 138.

[51] Weber and Varela, "Life after Kant," 116.

[52] Walsch, *Organisms*, 202.

[53] Ibid., 203.

[54] Feser, *Aristotle's Revenge*, 375. I will return later to Feser's Aristotelian approach to teleology.

providential action in the natural domain. If we follow some of the voices within these theological traditions, we should expect the existence of teleology, functions, goals, and purposes in nature. Teleology would not be an anomaly in such a world.

My general ambition has been to show that the form of teleology that we find within the natural order can a) be made safe from reductionist attempts, and b) be accommodated within a theological framework. The section on teleology above explored various ways of grounding teleological behavior, i.e. self-maintaining and self-organization, in the ontology of organisms. In such organismic behavior, we see the manifestation of "intrinsic teleology," namely "goal-orientated behavior which belongs to something by virtue of what it is."[55] Organisms are teleological by virtue of being organisms. On the other hand, organismic behavior also exhibits an "extrinsic teleology," which refers "to an entity which is essentially inert or passive and which *has teleological orientation imposed from without*."[56] On a theological reading of teleology, God is in some sense the ontological source, author, and sustainer of such phenomena. However, one worry at this point might be that this push towards intrinsic teleology makes divine providence superfluous, meaning that intrinsic teleology is bought at the expense of extrinsic teleology. A deistic conclusion from what has just been said about teleology might be that God has gifted creatures with certain teleological potentialities and then stepped back from creation. This would allow us to secure a form of intrinsic teleology, but God's ongoing contribution to the unfolding of creation would be called into question. If this were the case, organismic teleology would not shed light on divine providence, it would simply make it redundant. The various accounts of organismic teleology would then pave the way for a naturalistic worldview, rather than serving as possible models of God's providential action in the physical order. Once again, we need to find a way to frame the relationship between intrinsic and extrinsic teleology in a non-competitive manner. I will briefly highlight a theological model of creation that has gained some traction in the theology-science discussion in order to show what my proposal is *not* saying—after which I will venture into the domains of Aristotelianism and Thomism to find a better model.

In light of the purported problems of an interventionist view of God, Howard Van Till has opted for a view of divine activity based on the ontological assumption of creation as "gifted." God has gifted creation with the necessary ontological ingredients for it to successively manifest inanimate structures and biotic forms over longer periods of time.[57] God does not have to suspend or break the laws of nature to accomplish something within the natural order. Rather, physical reality is organised in such a way that creation can, by its own accord, manifest God's will through divinely ordered self-organizational principles. Van Till formulated his view of creation in direct opposition to those perspectives, including Intelligent Design, that subscribe to the notion of "episodic creationism," whereby God at certain points of time in natural history produces phenomena in ways that defy scientific explanation. This is a form of theological compatibilism, which seeks to render theism compatible with the broadly naturalistic assertion that the natural world is *complete*—there are no gaps in it that we need to plug with supernatural explanations.[58]

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[55] Simon Oliver, "Teleology Revived? Cooperation and the Ends of Nature," *Studies in Christian Ethics* 26, no. 2 (May 2013): 158-165.

[56] Ibid., 160 (emphasis mine).

[57] Howard Van Till, "The Creation: Intelligently Designed or Optimally Equipped?" in *Intelligent Design Creationism and Its Critics: Philosophical, Theological, and Scientific Perspectives*, ed. Robert T. Pennock (Cambridge, MA: MIT Press, 2001).

[58] This way of maintaining the completeness of nature seems to entail a commitment to what is usually called "the causal closure principle," which suggests that no physical event has a cause outside the physical realm. See, for example, Jaegwon Kim, *Supervenience and Mind: Selected Philosophical Essays* (Cambridge: Cambridge University Press, 1993), 280. See also David Papineau, "The Causal Closure of the Physical and Naturalism," in *The Oxford Handbook of Philosophy of Mind*, eds. Ansgar Beckermann, Brian P. McLaughlin, and Sven Walter (Oxford: Oxford University Press, 2009).

Van Till's view of divine action means that God's secondary causation is already contained in primary causation: everything unfolds due to God's initial act of bringing creation into existence.

Van Till's view of divine providence offers a possible model for placing intrinsic teleology in the natural domain. On his account, God's action could be construed as providing creation with teleological principles—such as self-organizational tendencies—which yield complex phenomena over longer periods of time. Although this account would surely ground intrinsic teleology in an adequate manner, the risk is that it either makes human freedom impossible or it pushes divine providence out of the picture. I elaborated on such a theological risk with Van Till's model in another article.[59] If we consider Van Till's model in a stronger form, God would have set up the universe and its progressive unfolding in a deterministic fashion. Like a pre-programmed machine, creation would simply obey the programmer's software code. However, if the universe was created in such a deterministic way, then what sense could we make of human freedom in such a world? William Alston has argued that the cost of such theistic determinism would be that it would no longer be possible to treat some events and not others as instantiated by God.[60] Such implications would be theologically problematic. Some form of intrinsic teleology could be preserved if we adopted Van Till's model, but it would be bought at the cost of challenging the belief in libertarian agency of natural creatures, as well as the belief in God's active presence in the world.

We need another theological framework that will both balance intrinsic and extrinsic teleology, and to formulate such teleology in a way that it would not threaten the conception of a sustaining and revelatory God. Can such a balance be achieved? Andrè Ariew has argued that there are essentially two mutually excluding ways to ground teleology in nature—although both positions eschew the materialistic *explaining away* of purpose.[61] One can go with the *Platonic Teleologist* who explains orderliness through higher or supernatural agency. This is an example of external teleology, given that the orderliness and purposiveness of natural phenomena are grounded in divine design—in the Platonic demiurge. One can also go with the *Aristotelian* explanation of teleology, which is very much a "*via media* between reductive materialism defended by a variety of Ionian natural philosophers and the natural theology of Plato's *Timaeus*."[62] On this account, the teleological structures that we see in various natural phenomena are not the "handiwork of a creator; rather they are due to some inner principle of change within living organisms."[63] Aristotle was of course a theist, yet he saw no reason to explain the telos of organisms through divine intentionality or will. If we follow Ariew, we would have to simply conclude that there is no way of bringing together extrinsic and intrinsic teleology in a positive way. We need either to adopt the transcendent or supernatural teleology of Plato, or to approach teleological phenomena from an Aristotelian perspective and articulate the purposive behavior of natural agents in terms of immanent principles.

In response to Ariew's either-or picture, Edward Feser demonstrates how one can balance extrinsic and intrinsic teleology through an Aristotelian-Thomistic metaphysical framework.

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[59] Mikael Leidenhag, "The Blurred Line Between Theistic Evolution and Intelligent Design," *Zygon: Journal of Religion and Science* 54, no. 4 (December 2019): 909-31.

[60] William P. Alston, "Divine Action or Divine Substance?" in *The God Who Acts: Philosophical and Theological Explorations*, ed. Thomas F. Tracy (Philadelphia, PA: Pennsylvania University Press, 1994), 41-62.

[61] Andrè Ariew, "Teleology," in *The Cambridge Companion to the Philosophy of Biology*, eds. David L. Hull and Michael Ruse (New York: Cambridge University Press, 2007).

[62] James G. Lennox, *Aristotle's Philosophy of Biology: Studies in the Origins of Life Sciences* (Cambridge: Cambridge University Press, 2001), 228.

[63] Ariew, "Teleology," 161.

Like the Aristotelian, Feser preserves the idea of teleology as intrinsic to organismic activities—the teleological nature of *X* follows from the essence of *X*. But Feser also grounds teleology in a divine source in a Thomistic fashion. As Feser goes on to explain, this proposal amounts to the middle-path of *Scholastic Teleological Realism*. While there is intrinsic teleology in nature, such teleology is *ultimately* explained by the divine intellect.[64]

Given that the orderliness of creation is grounded in divine intentionality, the critic might accuse this scholastic proposal of paving the way for a theology of Intelligent Design (ID). It is certainly the case that the Aristotelian-Thomistic (A-T) framework shares with ID the belief that teleology owes its existence to an outside source (certainly, it seems that *any* theist who is also a teleological realist would have to say that such purpose in nature is made possible by God—either through direct action, indirect action, or by sustaining creation). However, Feser's A-T framework differs substantially from ID when it comes to inferring "design" from natural phenomena. Feser helpfully explains the difference between A-T and ID in terms of the employment of two different explanatory strategies about natural purposes. For ID, the conclusion that God is the author of teleology follows directly from the *improbability* of various biological complexities emerging through natural causation alone—that is, in the absence of divine activity. The Thomist would say in light of the evidence for purpose that an "intermediate step in the argumentation is required."[65] Moreover, the Aristotelian teleologist says that the reality of intrinsic teleology in nature "has nothing at all to do with the complexity or the weighing of probabilities."[66] Teleology exists necessarily within organisms whose essential natures realize or instantiate teleological behavior. Teleology therefore has nothing to do with irreducible complexity within biological systems, or with specified complexity within DNA-structures (in contrast to Michael Behe and Stephen Meyer).[67] My concern with the ID-movement's general argument is that extrinsic teleology is bought at the cost of intrinsic teleology. Intelligent design produces a view of creation as a mere artefact—evidently, such an understanding of creation aligns itself closer to the mechanical conception of nature espoused by seventeenth-century natural philosophers.[68] The Thomistic approach, as exemplified by Aquinas's Fifth Way, amounts to something rather different as God enters the explanatory level at a different and later stage compared to ID theories. First (1), the Scholastic philosopher notes that there is irreducible and immanent teleology within nature. From that observation it is argued that (2) such teleology is unintelligible without an extra-natural intellect. From (1) and (2) it is concluded that there is an "intellect outside the natural order" which endowed natural agents with intrinsic teleology.[69]

What I have said so far about organismic teleology, then, is fully consistent with a broader framework that affirms God's active presence within the dynamics of evolution. Organismic teleology can be reconciled with theistic evolution. The reality of teleology, even when placed within a theological framework, does not necessitate the theology of Intelligent Design. Hence, affirming purpose within the biological world would not inexorably force the Catholic, Protestant, and Eastern Orthodox teleologies to take the problematic route of Intelligent Design.

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[64] Feser, *Aristotle's Revenge*, 417.

[65] Edward Feser, "Teleology: A Shopper's Guide," *Philosophia Christi* 12, no. 1 (2010): 142-159;148.

[66] Ibid., 155.

[67] Michael J. Behe, *Darwin's Black Box: The Biochemical Challenge to Evolution* (New York: Free Press, 2006); Stephen C. Meyer, *Signature in the Cell: DNA and the Evidence for Intelligent Design* (New York: HarperCollins, 2009).

[68] Simon Oliver, *Creation: A Guide for the Perplexed* (London: Bloomsbury T&T Clark, 2017), 116-124.

[69] Feser, "Teleology," 158-59.

Conclusion

Teleology has been linked to crucial doctrines and beliefs across several theological traditions. Within some versions of Catholic Natural Law Theory, it has been suggested that the very concept of human nature rests firmly on the possibility of construing human becoming, and the natural order in general, in teleological terms. Likewise, notable thinkers in the Eastern Orthodox tradition assume a vision of human nature in the doctrine of *theosis* that is intrinsically teleological: deification assumes an underlying teleology for humanity and the wider cosmos. Within the Protestant tradition, teleology has been used to frame God's providence in an evolutionary universe. Instead of undermining the idea of final causality in nature, thinkers such as James McCosh, Aubrey Moore, and Alister McGrath suggest that evolutionary science gives credence to a "wider teleology" in the universe. Such a wider teleology is fully consistent with the evolutionary emphasis on natural selection, and it provides important resources for framing God's active presence.

For many thinkers, evolution poses a significant challenge to purpose, goals, or any form of wider teleology in nature. Due to Darwin's insights, it was possible to replace Aristotelian, theistic, and vitalistic notions of purpose with a purely physical mechanism, hence offering the opportunity of explaining evolutionary developments in materialist terms. This article offers another view on the situation by analysing the possibility of understanding organisms as teleological. Drawing on several theories and proposals within philosophy of biology, I have argued that organismic activities go beyond the logic of reductionism. And, more positively, I go on to suggest that the very nature of organisms is teleological. This means that wherever there is an organism, we have natural purposes. All of this is certainly congruent with an Aristotelian conception of natural agents.

The final section discussed the issue of balancing intrinsic and extrinsic teleology, and whether or not a theological accommodation of teleology makes the idea of intrinsic teleology superfluous. Does the notion of God as the author of teleological phenomena turn organisms into mere artefacts? And, more worrisome, do we open up the door for intelligent design in virtue of connecting teleology to God's providence? I responded to both concerns through a theological framework that brings together Aristotelian metaphysics with a Thomistic theology. While this A-T framework grants the existence of intrinsic teleology (in an Aristotelian fashion), it also suggests that such teleology must ultimately be explained by divine agency (the Thomistic conclusion). My tentative suggestion is that an A-T ontology can provide the necessary conceptual tools for balancing the intrinsic purposefulness of biological organisms with extrinsic teleology. Moreover, this way of framing God's action within nature is significantly different to the preferred strategy of those in the intelligent design community. For instance, A-T does not infer divine intentionality from organismic teleology by weighing probabilities—given that organisms are necessarily teleological. In addition, the A-T proponent would suggest that an intermediate step is required for us to justifiably infer divine action from the goal-directed nature of biological organisms.

Even though some of these conclusions are tentative and need to be developed further, I nevertheless want to stress that theologians ought to engage with the resurgence of teleological accounts in philosophy of biology in order to avoid a problematic dualism between life and non-life, mind and matter, and between God's providence and natural processes. By re-discovering the teleological structure of nature, we can hopefully overcome the overly mechanistic conception of the world which has caused so much anxiety within contemporary theology. In doing so, a retrieved teleology can shed light on purpose *for* and *within* creation.[70]

[70] I would like to thank two anonymous reviewers for their many helpful suggestions and comments.